



Roller followers



TECHNICAL SUPPLEMENT

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NATR

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NATV..PP

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NUTR

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RNA 22..2RSR

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1. Bearing materials

SLB Yoke-type Track Rollers include the series RNA 22 (without inner ring) and series NA 22 (with inner ring), whose outer ring is not guided in the axial direction; and the NATR, NATV and series NUTR whose outer ring is guided in the axial direction.

With the series RNA 22 and NA 22, a needle roller and cage assembly and steel plate reinforced synthetic rubber seal are built into the outer ring, and these components are inseparable from each other. Since the bearing can be shifted in the axial direction, the shaft must have a thrust washer or flange to guide the outer ring.

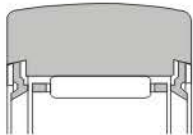


Fig. 1 Series RNA 22..2RSR

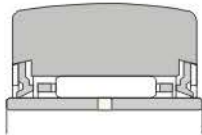


Fig. 2 Series NA 22..2RSR

With the series NATR, NATV, the outer ring is guided in the axial direction by two side plates that are press-fit into the inner ring. The series NATR bearing has an integral cage and needle roller assembly. The series NATV full-complement type can carry a larger load compared with the series NATR bearing, although its limiting speed is low.

On **SLB** Yoke-type Track Rollers, a labyrinth occurs between the outer ring and inner ring to provide sealing. For enhanced sealing, one type of bearing (suffix PP) incorporates a synthetic rubber seal between the outer ring and inner ring.

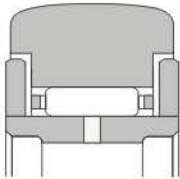


Fig. 3 Series NATR

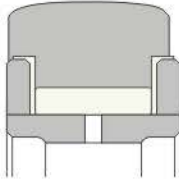


Fig. 4 Series NATV

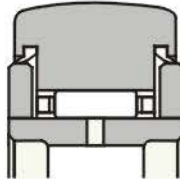


Fig. 5 Series NATR..PP

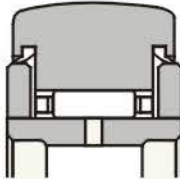


Fig. 6 Series NATV..PP

The rollers of the series NUTR are full-complement type rollers whose rolling elements are double-row cylindrical rollers. Compared with full-complement needle roller bearings, they feature greater load carrying capacity and thus are suitable for heavy load applications. Their outer ring incorporates a press-fit steel plate to form a labyrinth between the side plates on both sides of the inner ring to ensure reliable sealing and maintain the position of the side plates. The outer ring is guided in the axial direction by the outer ring rib and end faces of the cylindrical rollers, and can carry some axial load. The inner ring and side plates are tightened in the axial direction to eliminate clearance.

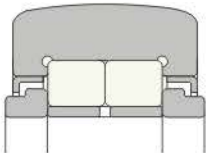
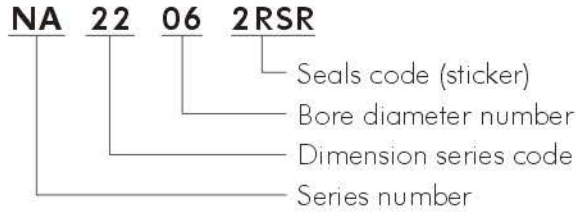


Fig. 7 Series NUTR

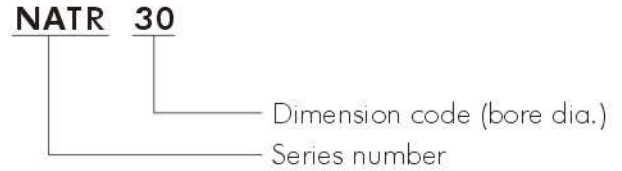
2. Interpreting bearing numbers

The bearing numbers of **SLB** Yoke-type Track Rollers comprise a series number, dimension series code, dimension code, and suffix.

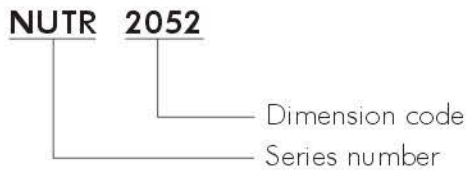
Series RNA, NA



Series NATR, NATV



Series NUTR



3. Bearing fits and radial clearance

The tolerance class of the shaft in relation to a bearing with an inner ring is g6 (h6). If a shaft is used directly as a raceway surface (series RNA 22), the tolerance class of the shaft must be k5 (k6). Usually, the outer ring of an **SLB** Yoke-type Track Roller is not built into a housing.

Table 1 Radial clearance

(Unit: μm)

Enveloping circle diameter F_w (mm) over incl.		Clearance							
		C2		Normal		C3		C4	
		min.	max.	min.	max.	min.	max.	min.	max.
3	6	0	10	3	17	15	30	20	40
6	10	0	12	5	20	15	30	25	45
10	18	0	15	5	25	15	35	30	55
18	30	0	20	10	30	20	40	40	65
30	50	0	25	10	40	25	55	50	80
50	80	0	30	15	50	30	65	60	100
80	100	0	35	20	55	35	75	70	115

4. Mounting dimensions

If a bearing lacks a function for axially guiding the outer ring, as in the case of the series RNA 22 series or NA 22 bearings, the shaft must be provided with a flange or thrust washer to guide the outer ring. The guide surface should preferably be hardened, and the guide width should be at least half the outer ring width. At minimum, the guide surface must be finished by a turning process, and must be smooth and free from burrs. The mounting surface for series NATR, NATV and NUTR rollers must at least adopt dimensions e specified in the associated bearing tables so that their side plates can make full contact.

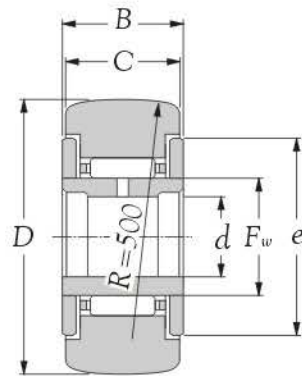
5. Lubrication

Rollers having a synthetic rubber seal (suffix PP) and those of the full-complement type are pre-filled with lithium soap grease and can operate at a temperature range of 25 °C to 100 °C.

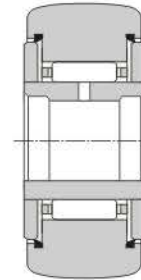
The internal bearing grease can be replenished through a lubrication hole on the inner ring.

The rollers must be installed so that the lubrication hole is located in a non-load zone.

The series NATV and NUTR being full-complement types, must be lubricated more frequently than the caged types.



Type NATR
(With cage)

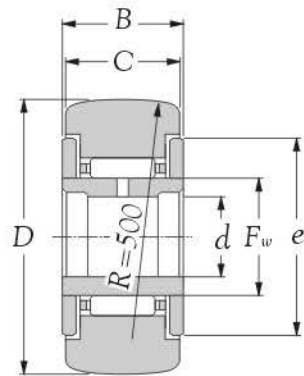


Type NATR.PP
(Double seals with cage)

Inner bore D 0±0.05 mm	Bearing number		Boundary dimensions					Basic load ratings			
			B	C	d	e	F_w	dynamic C	static C_o	dynamic C	static C_o
			mm					N			
16	NATR 5	NATR 5 PP	12 ⁰ _{-0.180}	11	5	12	8.0	3850	3950	395	400
19	NATR 6	NATR 6 PP	12 ⁰ _{-0.180}	11	6	14	10.0	4500	5100	460	520
24	NATR 8	NATR 8 PP	15 ⁰ _{-0.180}	14	8	19	12.0	6600	7300	675	745
30	NATR 10	NATR 10 PP	15 ⁰ _{-0.180}	14	10	23	15.0	7500	9100	765	930
32	NATR 12	NATR 12 PP	15 ⁰ _{-0.180}	14	12	25	17.0	8500	11100	865	1130
35	NATR 15	NATR 15 PP	19 ⁰ _{-0.210}	18	15	27	20.0	13000	20100	1320	2050
40	NATR 17	NATR 17 PP	21 ⁰ _{-0.210}	20	17	32	22.0	13600	22100	1390	2250
47	NATR 20	NATR 20 PP	25 ⁰ _{-0.210}	24	20	37	25.0	20300	33000	2070	3350
52	NATR 25	NATR 25 PP	25 ⁰ _{-0.210}	24	25	42	30.0	22300	39500	2280	4000
62	NATR 30	NATR 30 PP	29 ⁰ _{-0.210}	28	30	51	38.0	35000	64000	3600	6550
72	NATR 35	NATR 35 PP	29 ⁰ _{-0.210}	28	35	58	44.5	38000	74500	3850	7600
80	NATR 40	NATR 40 PP	32 ⁰ _{-0.230}	30	40	66	50.0	48500	90000	4950	9150
85	NATR 45	NATR 45 PP	32 ⁰ _{-0.230}	30	45	71	55.0	50500	97500	5150	9950
90	NATR 50	NATR 50 PP	32 ⁰ _{-0.230}	30	50	76	60.0	52000	105000	5300	10700

Technical supplement

	Cages	Precision	Grease
	Steel - <input checked="" type="checkbox"/>		
	Polymid - <input checked="" type="checkbox"/>	Normal (ISO)	Shell Alvania S2
	Brass - <input checked="" type="checkbox"/>		



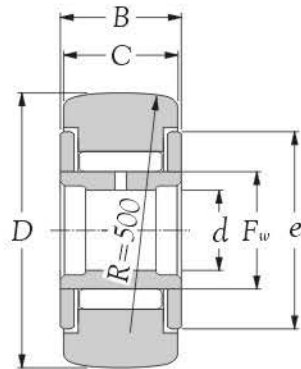
Type NATR
(With cage)



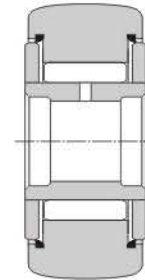
Type NATR..PP
(Double seals with cage)

Spherical outer ring	Load ratings of truck			Max runout speed		Weight kg.
	Cylindrical outer ring N	Cylindrical outer ring kgf	Cylindrical outer ring	grease r/min	oil r/min	
1080	3400	110	350	※19000	※25000	0.018
1380	4050	141	415	※15000	※20000	0.025
1900	6650	193	680	※12000	※16000	0.042
2620	7700	267	785	10000	※13000	0.061
2860	8200	291	835	9000	※12000	0.069
3200	11900	325	1220	7500	10000	0.098
3850	14500	390	1480	7000	9000	0.140
4700	21000	480	2150	6000	8000	0.246
5500	23300	565	2370	5000	6500	0.275
6950	33000	710	3350	4000	5500	0.470
8050	37000	820	3750	3300	4500	0.635
9800	44500	1000	4500	3000	4000	0.875
10400	47000	1060	4800	2700	3600	0.910
11400	50000	1160	5100	2500	3300	0.960

Notes: Limiting speed of sealed type bearings marked with ※ is approximately 10 000 r/min.



Type NATV
(Full complement type)

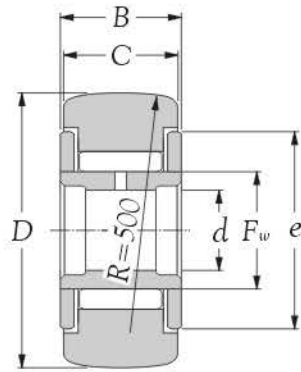
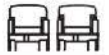


Type NATV..PP
(Full complement type with seals)

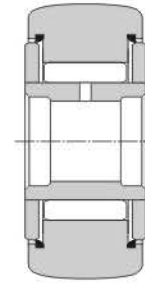
Inner bore D 0±0.05 mm	Bearing number		Boundary dimensions					Basic load ratings			
			B	C	d	e	F_w	dynamic C	static C_0	dynamic C	static C_0
			mm					N			
16	NATV 5	NATV 5 PP	12 ⁰ _{-0.180}	11	5	12	8.0	6250	8900	640	910
19	NATV 6	NATV 6 PP	12 ⁰ _{-0.180}	11	6	14	10.0	7200	11200	735	1140
24	NATV 8	NATV 8 PP	15 ⁰ _{-0.180}	14	8	19	12.0	10300	15500	1050	1580
30	NATV 10	NATV 10 PP	15 ⁰ _{-0.180}	14	10	23	15.0	11700	19500	1190	1980
32	NATV 12	NATV 12 PP	15 ⁰ _{-0.180}	14	12	25	17.0	12600	22100	1280	2250
35	NATV 15	NATV 15 PP	19 ⁰ _{-0.210}	18	15	27	20.0	18000	37000	1830	3750
40	NATV 17	NATV 17 PP	21 ⁰ _{-0.210}	20	17	32	22.0	18900	40500	1930	4150
47	NATV 20	NATV 20 PP	25 ⁰ _{-0.210}	24	20	37	25.0	28400	60000	2900	6100
52	NATV 25	NATV 25 PP	25 ⁰ _{-0.210}	24	25	42	30.0	31000	72000	3150	7350
62	NATV 30	NATV 30 PP	29 ⁰ _{-0.210}	28	30	51	38.0	46500	112000	4750	11400
72	NATV 35	NATV 35 PP	29 ⁰ _{-0.210}	28	35	58	44.5	51000	130000	5200	13300
80	NATV 40	NATV 40 PP	32 ⁰ _{-0.250}	30	40	66	50.0	67500	167000	6850	17100
90	NATV 50	NATV 50 PP	32 ⁰ _{-0.250}	30	50	76	60.0	74500	200000	7600	20400

Technical supplement

	Cages	Precision	Grease
	Steel- <input checked="" type="checkbox"/>		
	Polymid- <input checked="" type="checkbox"/>	Normal (ISO)	Shell Alvania S2
	Brass- <input checked="" type="checkbox"/>		



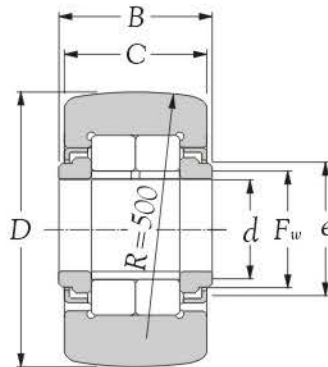
Type NATV
(Full complement type)



Type NATV.PP
(Full complement type with seals)

Spherical outer ring	Load ratings of truck			Max runout speed		Weight kg.
	Cylindrical outer ring N	Cylindrical outer ring kgf	Cylindrical outer ring	grease r/min	oil	
1080	3400	110	350	※13000	※16000	0.020
1380	4050	141	415	10000	※13000	0.027
1900	6650	193	680	8500	※11000	0.044
2620	7700	267	785	6500	8500	0.065
2860	8200	291	835	6000	7500	0.074
3200	11900	325	1220	5000	6500	0.102
3850	14500	390	1480	4500	6000	0.145
4700	21000	480	2150	4000	5000	0.254
5500	23300	565	2370	3300	4500	0.285
6950	33000	710	3350	2600	3500	0.481
8050	37000	820	3750	2200	2900	0.647
9800	44500	1000	4500	2000	2600	0.890
11400	50000	1160	5100	1600	2100	0.990

Notes: Limiting speed of sealed type bearings marked with ※ is approximately 10 000 r/min.

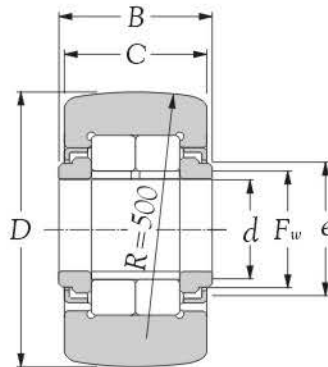


Inner bore D 0±0.05 mm	Bearing number	Boundary dimensions						Basic load ratings			
		B	C	d	e	F_w	$r_s \text{ min}^{\text{D}}$	dynamic C	static C_0	dynamic C	static C_0
		mm						N			
35	NUTR 15	19 ⁰ _{-0.210}	18	15	20	19.0	0.3	22300	25700	2280	2620
40	NUTR 17	21 ⁰ _{-0.210}	20	17	22	21.5	0.3	24100	29100	2450	2970
42	NUTR 1542	19 ⁰ _{-0.210}	18	15	20	19.0	0.3	22300	25700	2280	2620
47	NUTR 1747	21 ⁰ _{-0.210}	20	17	22	21.5	0.3	24100	29100	2450	2970
47	NUTR 20	25 ⁰ _{-0.210}	24	20	27	25.5	0.3	38500	48000	3950	4900
52	NUTR 2052	25 ⁰ _{-0.210}	24	20	27	25.5	0.3	38500	48000	3950	4900
52	NUTR 25	25 ⁰ _{-0.210}	24	25	31	30.0	0.3	42500	57500	4350	5850
62	NUTR 2562	25 ⁰ _{-0.210}	24	25	31	30.0	0.3	42500	57500	4350	5850
62	NUTR 30	29 ⁰ _{-0.210}	28	30	38	35.0	0.3	56500	72500	5750	7400
72	NUTR 3072	29 ⁰ _{-0.210}	28	30	38	35.0	0.3	56500	72500	5750	7400
72	NUTR 35	29 ⁰ _{-0.210}	28	35	44	41.5	0.6	62000	85500	6350	8700
80	NUTR 3580	29 ⁰ _{-0.210}	28	35	44	41.5	0.6	62000	85500	6350	8700
80	NUTR 40	32 ⁰ _{-0.250}	30	40	51	47.5	0.6	87000	125000	8850	12700
85	NUTR 45	32 ⁰ _{-0.250}	30	45	55	52.5	0.6	92000	137000	9350	14000
90	NUTR 4090	32 ⁰ _{-0.250}	30	40	51	47.5	0.6	87000	125000	8850	12700
90	NUTR 50	32 ⁰ _{-0.250}	30	50	60	57.0	0.6	96500	150000	9800	15300
100	NUTR 45100	32 ⁰ _{-0.250}	30	45	55	52.5	0.6	92000	137000	9350	14000
110	NUTR 50110	32 ⁰ _{-0.250}	30	50	60	57.0	0.6	96500	150000	9800	15300

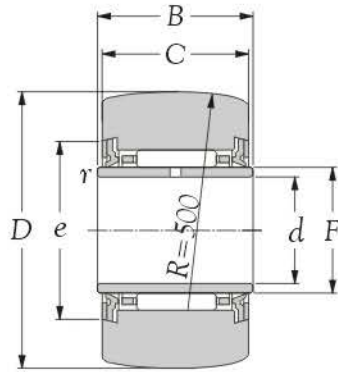
Notes: 1) These values are the allowable minimum dimensions of the chamfer dimension r_s .

Technical supplement

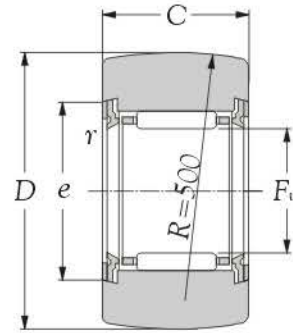
Cages	Precision	Grease
Steel - <input checked="" type="checkbox"/>		
Polymid - <input checked="" type="checkbox"/>	Normal (ISO)	Shell Alvania S2
Brass - <input checked="" type="checkbox"/>		



Spherical outer ring	Load ratings of truck			Max runout speed grease r/min	Weight kg(s).
	Cylindrical outer ring N	Cylindrical outer ring kgf	Cylindrical outer ring kgf		
3200	11900	325	1220	5500	0.100
3850	14500	390	1480	4700	0.147
4100	14300	415	1460	5500	0.160
4700	17000	480	1740	4700	0.222
4700	21000	480	2150	4000	0.245
5550	23300	565	2370	4000	0.321
5550	23300	565	2370	3300	0.281
6950	27800	710	2830	3300	0.450
6950	33000	710	3350	2900	0.466
8050	38500	820	3900	2900	0.697
8050	37000	820	3750	2400	0.630
9800	41000	1000	4150	2400	0.840
9800	44500	1000	4500	2100	0.817
10400	47000	1060	4800	1900	0.883
11400	50000	1160	5100	2100	1.130
11400	50000	1160	5100	1800	0.950
13000	55500	1330	5650	1900	1.400
14700	61000	1500	6200	1800	1.690



Type NA 22..2RSR
(With inner ring and double seals)



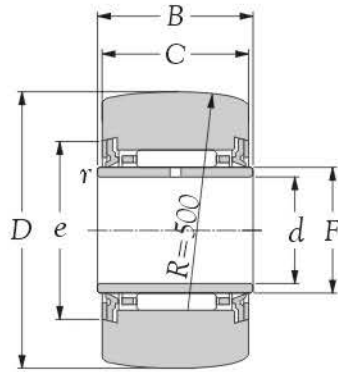
Type RNA 22..2RSR
(Without inner ring and double seals)

Inner bore D 0±0.05 mm	Bearing number		Boundary dimensions							Basic load ratings			
			B	C	d	F_w	e	F	r s min ⁻¹	dynamic C	static C_0	dynamic C	static C_0
			mm							N			
19	NA 22/6 2RSR	RNA 22/6 2RSR	12	11.8	6	10 ^{+0.022} _{+0.013}	16	10	0.3	4300	3950	435	405
24	NA 22/8 2RSR	RNA 22/8 2RSR	12	11.8	8	12 ^{+0.027} _{+0.016}	18	12	0.3	4850	4900	495	500
30	NA 2200 2RSR	RNA 2200 2RSR	14	13.8	10	14 ^{+0.027} _{+0.016}	20	14	0.3	7200	8500	735	865
32	NA 2201 2RSR	RNA 2201 2RSR	14	13.8	12	16 ^{+0.027} _{+0.016}	22	16	0.3	7750	9700	795	990
35	NA 2202 2RSR	RNA 2202 2RSR	14	13.8	15	20 ^{+0.033} _{+0.020}	26	20	0.3	9500	13400	970	1370
40	NA 2203 2RSR	RNA 2203 2RSR	16	15.8	17	22 ^{+0.033} _{+0.020}	28	22	0.3	10100	14900	1030	1520
47	NA 2204 2RSR	RNA 2204 2RSR	18	17.8	20	25 ^{+0.033} _{+0.020}	33	25	0.3	16500	22100	1680	2250
52	NA 2205 2RSR	RNA 2205 2RSR	18	17.8	25	30 ^{+0.033} _{+0.020}	38	30	0.3	17400	25000	1770	2550
62	NA 2206 2RSR	RNA 2206 2RSR	20	19.8	30	35 ^{+0.041} _{+0.025}	43	35	0.3	20900	33500	2130	3400
72	NA 2207 2RSR	RNA 2207 2RSR	23	22.7	35	42 ^{+0.041} _{+0.025}	50	42	0.6	25700	46000	2630	4700
80	NA 2208 2RSR	RNA 2208 2RSR	23	22.7	40	48 ^{+0.041} _{+0.025}	57	48	0.6	27800	53500	2830	5450
85	NA 2209 2RSR	RNA 2209 2RSR	23	22.7	45	52 ^{+0.049} _{+0.030}	62	52	0.6	28600	57000	2920	5800
90	NA 2210 2RSR	RNA 2210 2RSR	23	22.7	50	58 ^{+0.049} _{+0.030}	68	58	0.6	30500	64000	3100	6500

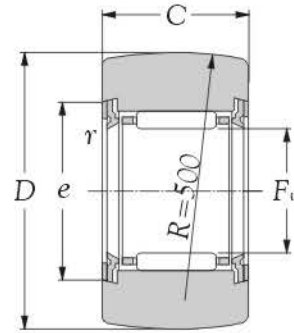
Notes: 1) These values are the allowable minimum dimensions of the chamfer dimension r .

Technical supplement

Cages	Precision	Grease
Steel -	<input checked="" type="checkbox"/>	
Polymid -	<input checked="" type="checkbox"/>	
Brass -	<input checked="" type="checkbox"/>	
	Normal (ISO)	Shell Alvania S2



Type NA 22..2RSR
(With inner ring and double seals)



Type RNA 22..2RSR
(Without inner ring and double seals)

Spherical outer ring	Load ratings of truck			Max runout speed grease r/min	Weight	
	Cylindrical outer ring N	Cylindrical outer ring kgf	Cylindrical outer ring kgf		Typt NA 22..2RSR	Typt RNA 22..2RSR
1380	4400	141	445	10000	0.023	0.018
1900	5500	193	565	10000	0.035	0.027
2620	7550	267	770	10000	0.060	0.052
2860	8050	291	820	9500	0.067	0.057
3200	8800	325	900	7500	0.075	0.060
3850	10900	390	1110	7000	0.113	0.094
4700	14800	480	1510	6000	0.176	0.152
5550	16400	565	1670	5000	0.209	0.179
6950	22200	710	2260	4300	0.322	0.284
8050	28700	820	2930	3600	0.506	0.432
9800	32000	1000	3250	3100	0.623	0.530
10400	34000	1060	3450	2900	0.638	0.545
11400	36000	1160	3650	2600	0.682	0.563